National Institute of Environmental Health Sciences

Reducing the impact of summer cattle grazing on water quality in the Sierra Nevada Mountains of California: A proposal

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Abstract:

The Sierra Nevada Mountain range serves as an important source of drinking water for the State of California. However, summer cattle grazing on federal lands affects the overall water quality yield from this essential watershed as cattle manure is washed into the lakes and streams or directly deposited into these bodies of water. This organic pollution introduces harmful microorganisms and also provides nutrients such as nitrogen and phosphorus which increase algae growth causing eutrophication of otherwise naturally oligotrophic mountain lakes and streams. Disinfection and filtration of this water by municipal water districts after it flows downstream will become increasingly costly. This will be compounded by increasing surface water temperatures and the potential for toxins release by cyanobacteria blooms. With increasing demands for clean water for a state population approaching 40 million, steps need to be implemented to mitigate the impact of cattle on the Sierra Nevada watershed. Compared to lower elevations, high elevation grazing has the greatest impact on the watershed because of fragile unforgiving ecosystems. The societal costs from non-point pollution exceed the benefit achieved through grazing of relatively few cattle at the higher elevations. We propose limiting summer cattle grazing on public lands to lower elevations, with a final goal of allowing summer grazing on public lands only below 1,500 m elevation in the Central and Northern Sierra and 2,000 m elevation in the Southern Sierra.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Food/Water Quality, Temperature

Food/Water Quality: Biotoxin/Algal Bloom

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

Mountain

Geographic Location:

resource focuses on specific location

United States

Health Co-Benefit/Co–Harm (Adaption/Mitigation): ☑

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Marine Toxin Syndrome

Intervention: ☑

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Mitigation

Other Projection Model/Methodology: Discussion only

Resource Type: ☑

format or standard characteristic of resource

Policy/Opinion

Timescale: ☑

time period studied

Time Scale Unspecified